UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,217	03/19/2004	Seung-hun Jeon	Q79491	6096

23373 7590 10/30/2007

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
MONIKANG, GEORGE C	

ART UNIT	PAPER NUMBER
2615	

MAIL DATE	DELIVERY MODE
10/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,217	JEON ET AL.	
	Examiner	Art Unit	
	George C. Monikang	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/804,217.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 8 & 15 (Application No. 10/804,217, hereinafter referred to as '217) are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-5, 7 & 9 of copending (Application No. 11/326,451, hereinafter referred to as '451). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The '217 claims 1, 8 & 15 are broader recitations of the same invention claimed in '451 claims 1, 4-5, 7 & 9. Therefore, '451 claims 1, 4-5, 7 & 9 are encompassed by

'217 claims 1, 8 & 15. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing license fees to two different parties.

Claims 3-4 & 10-11 (Application No. 10/804,217, hereinafter referred to as '217) are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 2 of copending (Application No. 11/326,451, hereinafter referred to as '451). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The '217 claims 3-4 & 10-11 are broader recitations of the same invention claimed in '451 claim 2. Therefore, '451 claim 2 is encompassed by '217 claims 3-4 & 10-11. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing license fees to two different parties.

Claims 5-6 & 12-13 (Application No. 10/804,217, hereinafter referred to as '217) are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3, 10 & 15 of copending (Application No. 11/326,451, hereinafter referred to as '451). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The '217 claims 5-6 & 12-13 are broader recitations of the same invention claimed in '451 claims 3, 10 & 15. Therefore, '451 claims 3, 10 & 15 are encompassed by '217 claims 5-6 & 12-13. It is critical that patents issuing from these applications be commonly owned to avoid potential licensees from owing license fees to two different parties.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5, 12 & 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Hershberger, US Patent 6,711,214 B1.

Re Claim 5, Hershberger discloses an apparatus for reconstructing a high frequency part of a first signal (*col. 6, lines 8-15*), the apparatus comprising: a first generator which generates a cosine signal (*fig. 9: 144*); a first multiplier which multiplies an input signal by the cosine signal to generate a first multiplied signal (*fig. 9: 140*); a first low-pass filter which low-pass filters the first multiplied signal to generate a first low-

pass filtered signal (*fig. 9: 146*); and a second multiplier which multiplies the first low-pass filtered signal by the cosine signal to generate a second multiplied signal (*fig. 9: 172*).

Claims 12 & 16 have been analyzed and rejected according to claim 5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 8-9 & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al, US Patent 4,972,489, in view of Johnson et al, US Patent 7,184,556 B1.

Re Claim 1, Oki et al discloses an apparatus for reconstructing a high frequency part of a first signal (*abstract*), the apparatus comprising: a band-pass filter which filters a high frequency part of the input signal to generate a filtered signal (*fig. 5: 12a & 12b; col. 3, lines 12-26*); and an adder which adds the frequency-shifted signal to the input

signal (*fig. 5: 14*); but fails to disclose a frequency inverter which inverts a frequency of an input signal to generate a frequency-inverted input signal (*Johnson et al, col. 1, lines 51-59*); and a converter which shifts a frequency of a signal so as not to generate an aliasing of the input signal and the signal to generate a frequency-shifted signal (*Johnson et al, col. 24, lines 1-16*). However, Johnson et al does.

Taking the combined teachings of Oki et al and Johnson et al as a whole, one skilled in the art would have found it obvious to modify the apparatus for reconstructing a high frequency part of a first signal (*abstract*), the apparatus comprising: a band-pass filter which filters a high frequency part of the input signal to generate a filtered signal (*fig. 5: 12a & 12b; col. 3, lines 12-26*); and an adder which adds the frequency-shifted signal to the input signal (*fig. 5: 14*) of Oki et al with a frequency inverter which inverts a frequency of an input signal to generate a frequency-inverted input signal (*Johnson et al, col. 1, lines 51-59*); and a converter which shifts a frequency of a signal so as not to generate an aliasing of the input signal and the signal to generate a frequency-shifted signal (*Johnson et al, col. 24, lines 1-16*) as taught in Johnson et al to eliminate oscillation without a significant loss to sounds.

Re Claim 2, the combined teachings of Oki et al and Johnson et al disclose the apparatus of claim 1, wherein the input signal comprises an audio signal (*Oki et al, col. 3, lines 12-15*).

Claims 8 & 15 have been analyzed and rejected according to claim 1.

Claim 9 has been analyzed and rejected according to claim 2.

Claims 3 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al, US Patent 4,972,489 and Johnson et al, US Patent 7,184,556 B1 as applied to claim 1 above, in view of Wakai et al, US Patent 5,926,065.

Re Claim 3, the combined teachings of Oki et al and Johnson et al disclose the apparatus of claim 1, but fails to disclose wherein the frequency inverter inverts the frequency of the input signal by multiplying the input signal by an external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal. However, Wakai et al does (*col. 6, lines 21-32*).

Taking the combined teachings of Oki et al, Johnson et al and Wakai et al as a whole, one skilled in the art would have found it obvious to modify the apparatus of Oki et al and Johnson et al with wherein the frequency inverter inverts the frequency of the input signal by multiplying the input signal by an external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal as taught in Wakai et al (*col. 6, lines 21-32*) to produce signals of the in-phase component and the rectangular phase component.

Claim 10 has been analyzed and rejected according to claim 3.

Claims 4 & 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al, US Patent 4,972,489 and Johnson et al, US Patent 7,184,556 B1 as applied to claim 1 above, in view of Liljeryd et al, US Patent 6,680,972 B1.

Re Claim 4, the combined teachings of Oki et al and Johnson et al disclose the apparatus of claim 1, but fails to disclose wherein the converter shifts the frequency of the filtered signal by multiplying the filtered signal by an external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal. However, Liljeryd et al does (*col. 13, lines 42-52*).

Taking the combined teachings of Oki et al, Johnsoon et al and Liljeryd et al as a whole, one skilled in the art would have found it obvious to modify the apparatus of Oki et al and Johnson et al with wherein the converter shifts the frequency of the filtered signal by multiplying the filtered signal by an external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal as taught in Liljeryd et al (*col. 13, lines 42-52*) to allow arbitrary selection of individual pass-bands and oscillator frequencies.

Claim 11 has been analyzed and rejected according to claim 4.

Claims 6-7 & 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hershberger, US Patent 6,711,214 B1 as applied to claim 5 above, in view of Liljeryd et al, US Patent 6,680,972 B1.

Re Claim 6, Hershberger disclose the apparatus of claim 5, further comprising: a second generator which generates a sine signal (*fig. 9: 170*); a third multiplier which multiplies the input signal by the sine signal to generate a third multiplied signal (*fig. 9:*

142); a second low-pass filter which low-pass filters the third multiplied signal to generate a second low-pass filtered signal (*fig. 9: 148*); a third generator (*fig. 9: 166*); a fourth multiplier which multiplies the second low-pass filtered signal by the negative sine signal to generate a fourth multiplied signal (*fig. 9: 176 or 164*); a summation unit which sums the second multiplied signal obtained by the second multiplier and the fourth multiplied signal obtained by the fourth multiplier to generate a summed signal (*fig. 9: 168*); but fails to disclose an adder which adds the summed signal to the input signal. However, of Liljeryd et al does (*fig. 29; col. 23, lines 23-33*).

Taking the combined teachings of Hershberger and Liljeryd et al as a whole, one skilled in the art would have found it obvious to modify the apparatus of claim 5, further comprising: a second generator which generates a sine signal (*fig. 9: 170*); a third multiplier which multiplies the input signal by the sine signal to generate a third multiplied signal (*fig. 9: 142*); a second low-pass filter which low-pass filters the third multiplied signal to generate a second low-pass filtered signal (*fig. 9: 148*); a third generator (*fig. 9: 166*); a fourth multiplier which multiplies the second low-pass filtered signal by the negative sine signal to generate a fourth multiplied signal (*fig. 9: 176 or 164*); a summation unit which sums the second multiplied signal obtained by the second multiplier and the fourth multiplied signal obtained by the fourth multiplier to generate a summed signal (*fig. 9: 168*) of Hershberger with an adder which adds the summed signal to the input signal as taught in Liljeryd et al (*fig. 29; col. 23, lines 23-33*) for a perceptual improvement at low computational costs.

The combined teachings of Hershberger and Liljeryd et al fail to disclose "a third generator which generates a negative sine signal." Official notice is taken that both the concepts and advantages of providing a negative sine wave are well known in the art. It would have been obvious to use a negative sine wave since it is just an inverter of the sine wave.

Re Claim 7, the combined teachings of Hershberger and Liljeryd et al disclose the apparatus of claim 6, wherein the signal comprises an audio signal (*Liljeryd et al, col. 2, lines 40-43*).

Claim 13 has been analyzed and rejected according to claim 6.

Claim 14 has been analyzed and rejected according to claim 7.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Monikang whose telephone number is 571-270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

George Monikang 10/25/2007

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600